Private mobiele netwerken & indoor dekking tbv mobiele operators

Full service proposities; netwerk aaS

Koen Mioulet,

Solutions manager *enterprise wireless*

Cellnex

Overzicht

TELECOM INFRA EVENT 2019
26-09-2019
BREEPARK BREDA

1. Introductie
2. Indoor Wireless toepassingen
3. Kosteneffectieve indoor oplossingen
4. Private LTE/mobiele netwerken
5. Alternatief: full service lease opties
6. Samenvatting

Cellnex Netherlands

Shere Masten,
Acquired October 2016
Appr 500 towers and sites

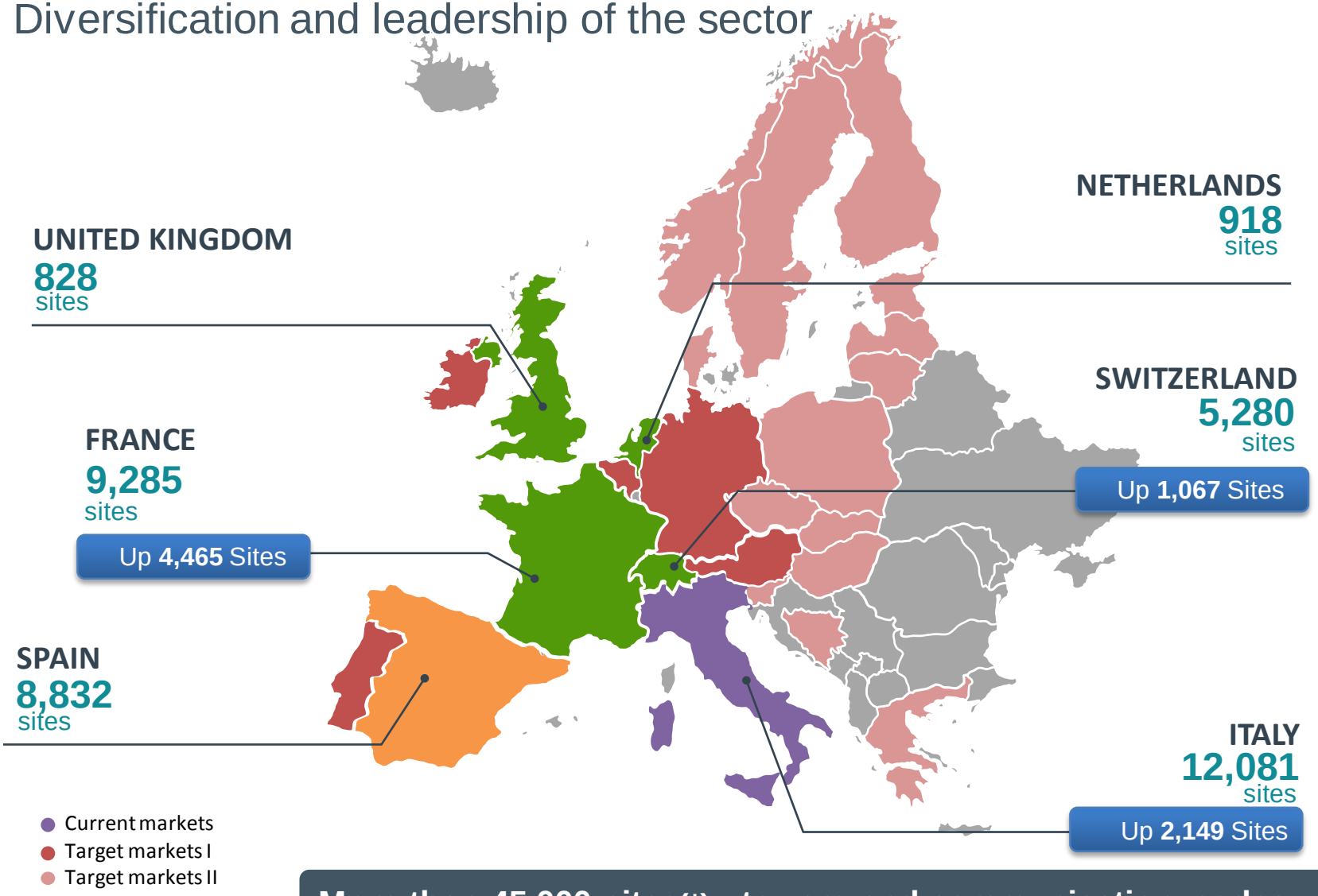
Towerlink Netherlands,
Acquired July 2016
261 towers

Alticom B.V.,
Acquired September 2017
30 long-range, high-capacity telecommunications towers

All together almost 800 towers and sites in The Netherlands

The Cellnex portfolio

Diversification and leadership of the sector



More than 45,000 sites(*), towers and communication nodes

(*) Includes sites to be built in 2020-2027

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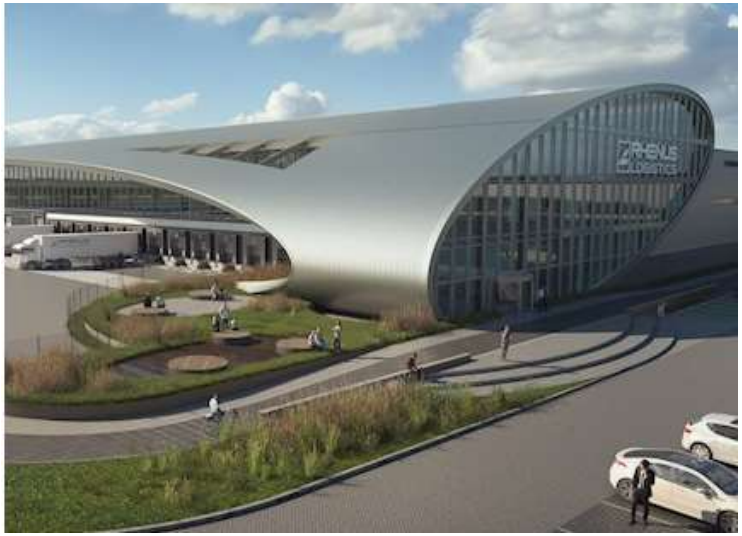
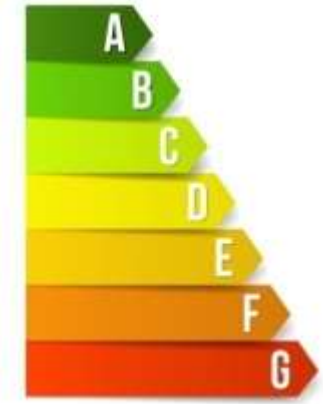
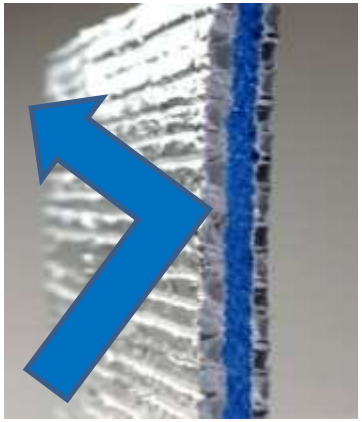
Indoor wireless markt
Trend 1: gebouwen isolatie

- Gebouwen steeds beter geisoleerd (energie ‘labels’)
- Niet alleen thermisch ☺







Trend 2: Gebruik mobiel, ooit vooral buiten maar nu overwegend indoor

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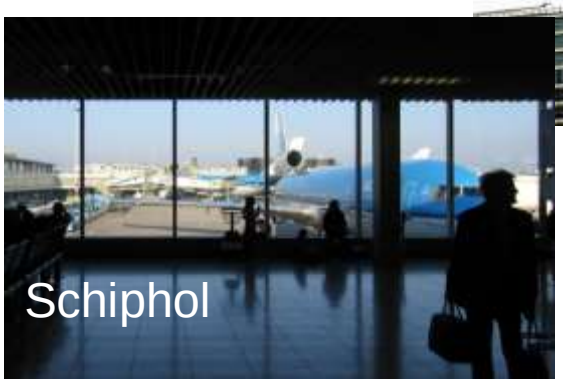
Indoor Wireless markt
Mobiele apparaten overal in werkomgeving

Binnen => indoor !

Indoor? Voorbeeld projecten 3en in NL !

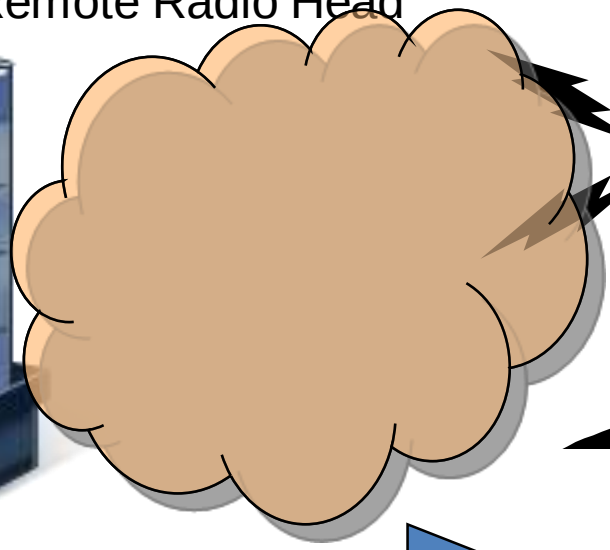


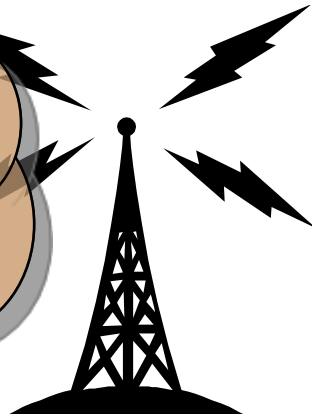
Generieke concept *indoor coverage*

Oa met pico- en femto cells

Of repeaters

Basis Station/
Remote Radio Head

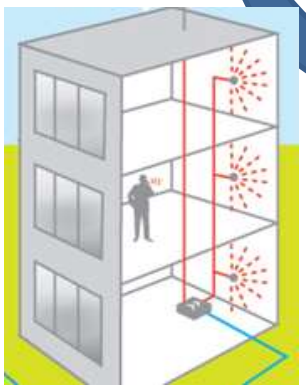




INDOOR

OUTDOOR

Al dan niet met een antenne netwerk



Positionering alternatieven indoor

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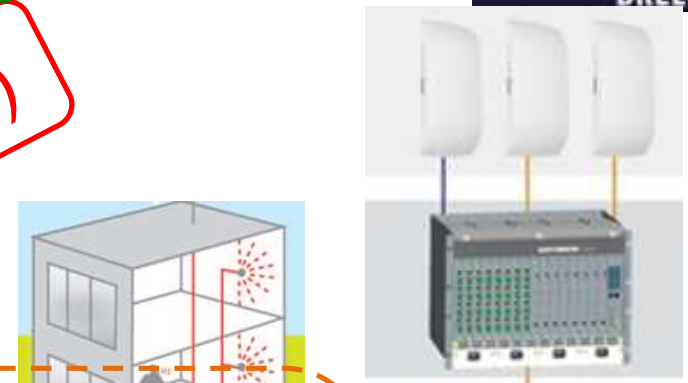
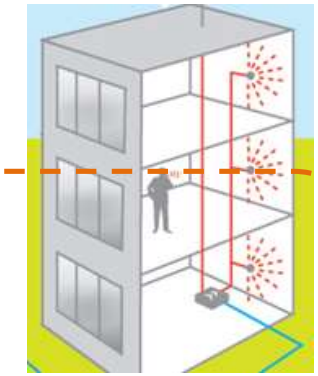
Nr of users,
Nr of networks

afstemming operator(s)



Granular, configurable active antennas network



Distributed Antenna System

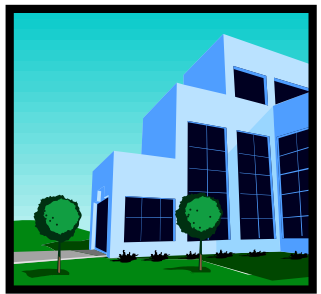
Repeater

Small cell

Business case !

Business case ...?

Size building



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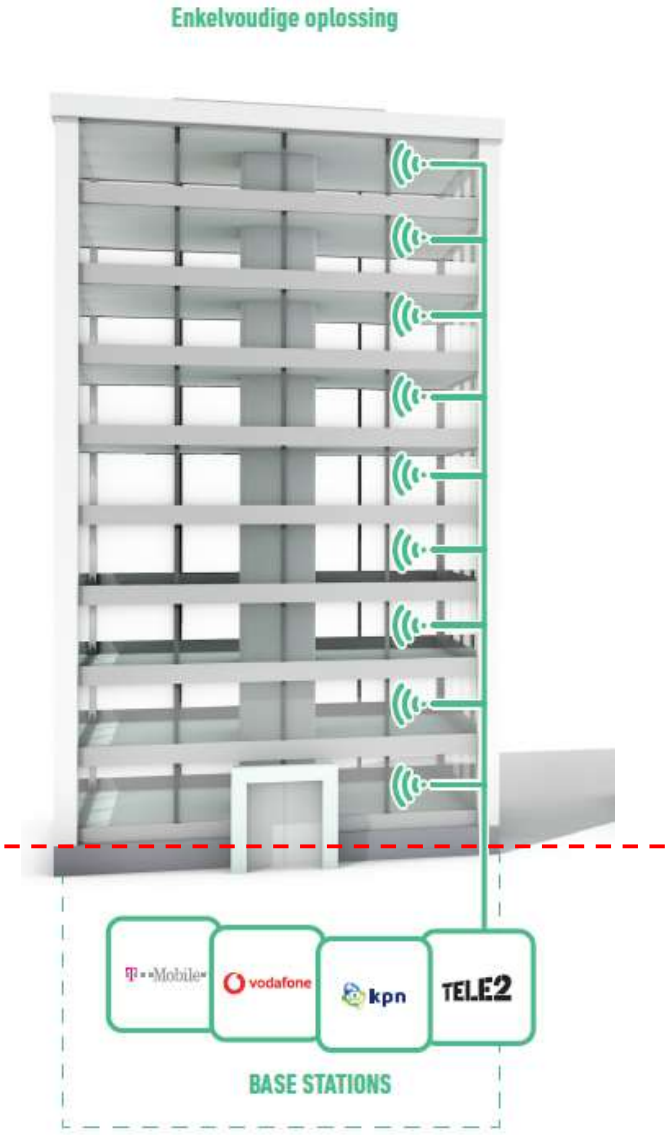
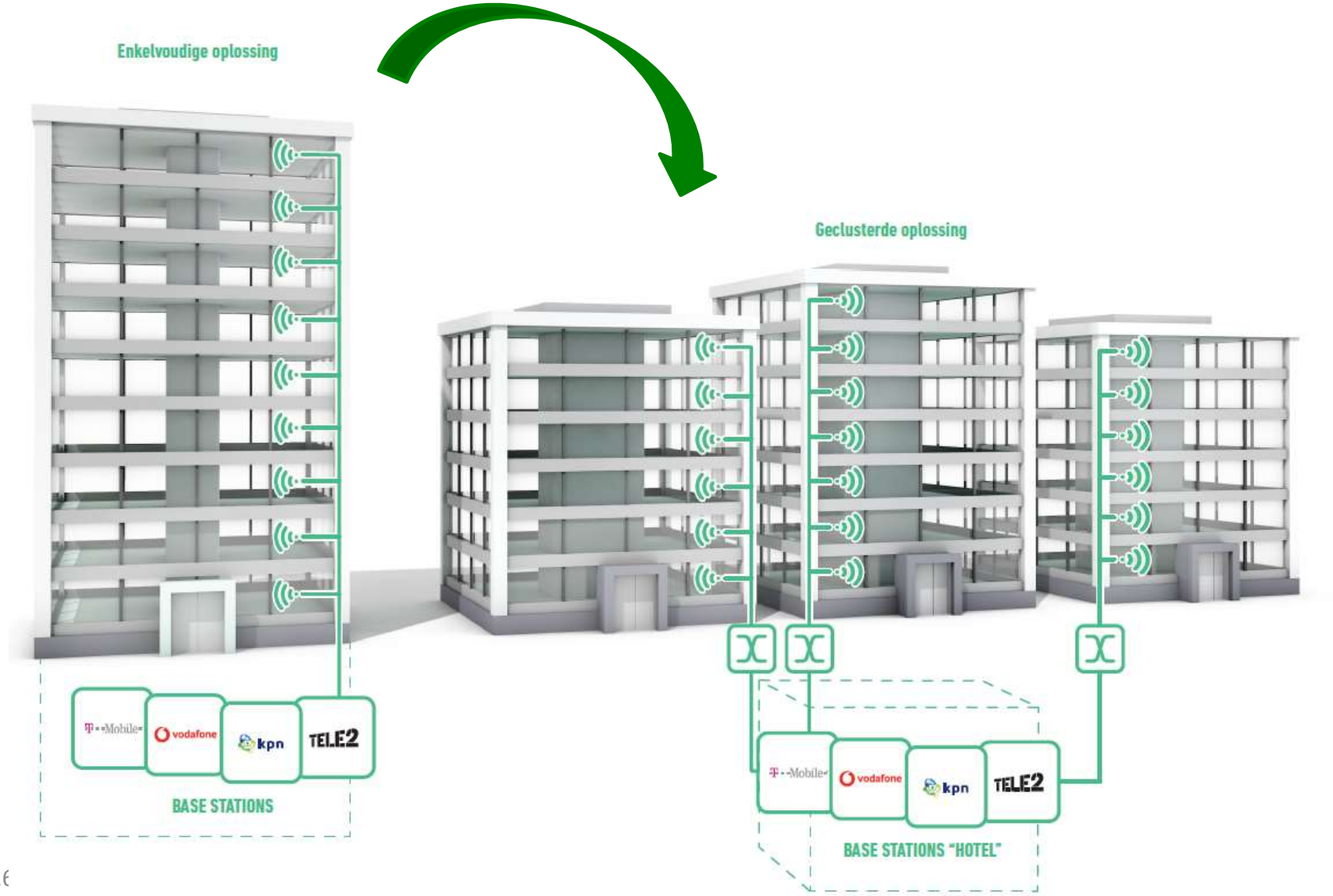
Indoor Systeem, algemene topologie

Domein gebouw eigenaar of -beheerder



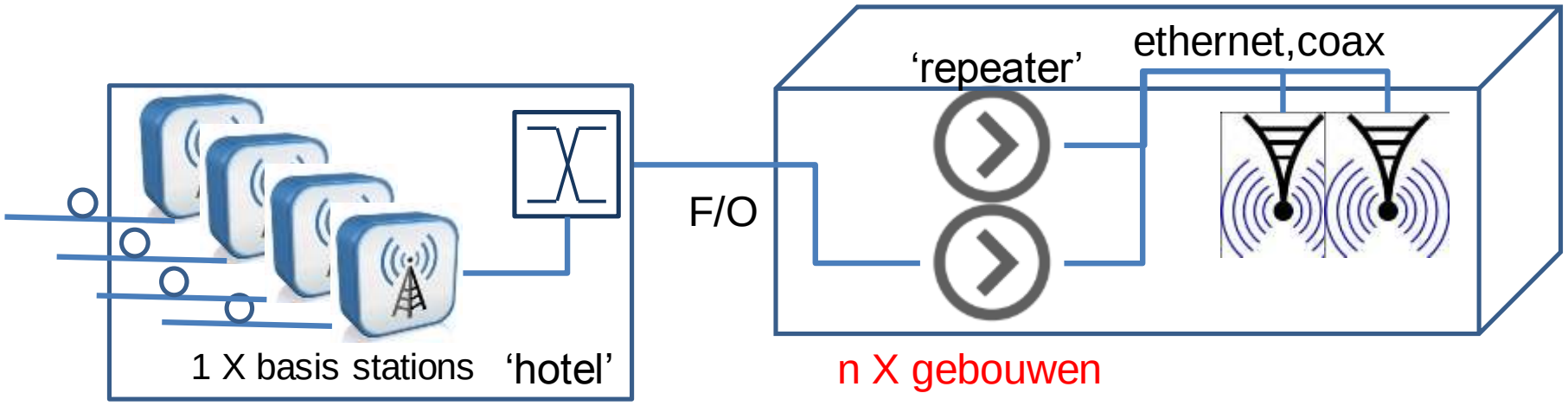
Domein mobiele operators

Van enkelvoudig naar geclusterd



Base Station “hotels”,

- Efficient gebruik dure radiomiddelen
  - *Pooling* van basis stations in hotels tbv meer objecten
  - 1-malige kostbare (glasvezel) transmissie
- Makkelijkst met bepaald type optische indoor oplossing:



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Convergence business critical wireless use to LTE

Analogue radio networks

Digital trunked radio's

DECT systems

Wifi private networks

Proprietary wireless systems

Private GSM networks

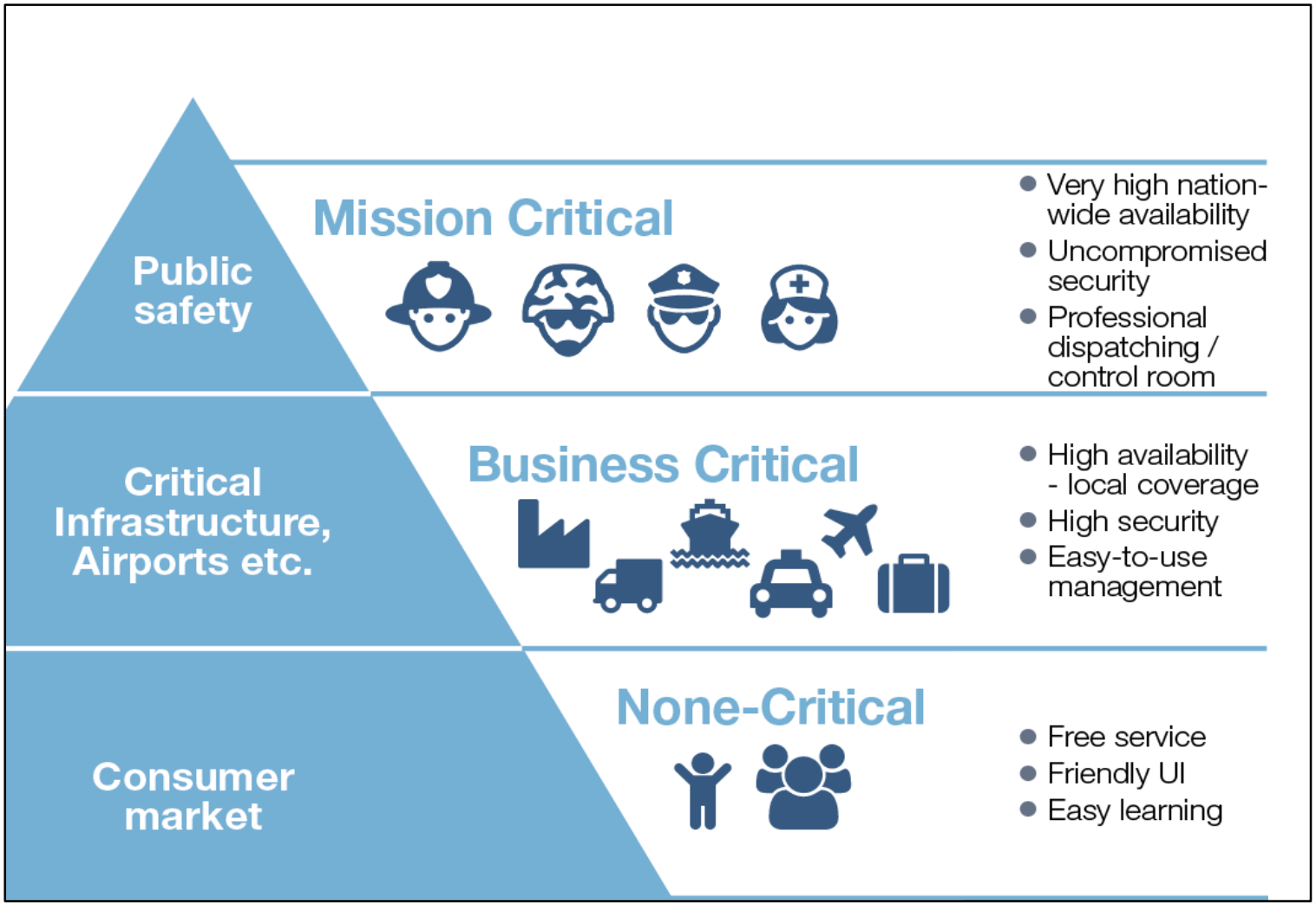
Mobile data subscriptions

Lte™

Source: TCCA

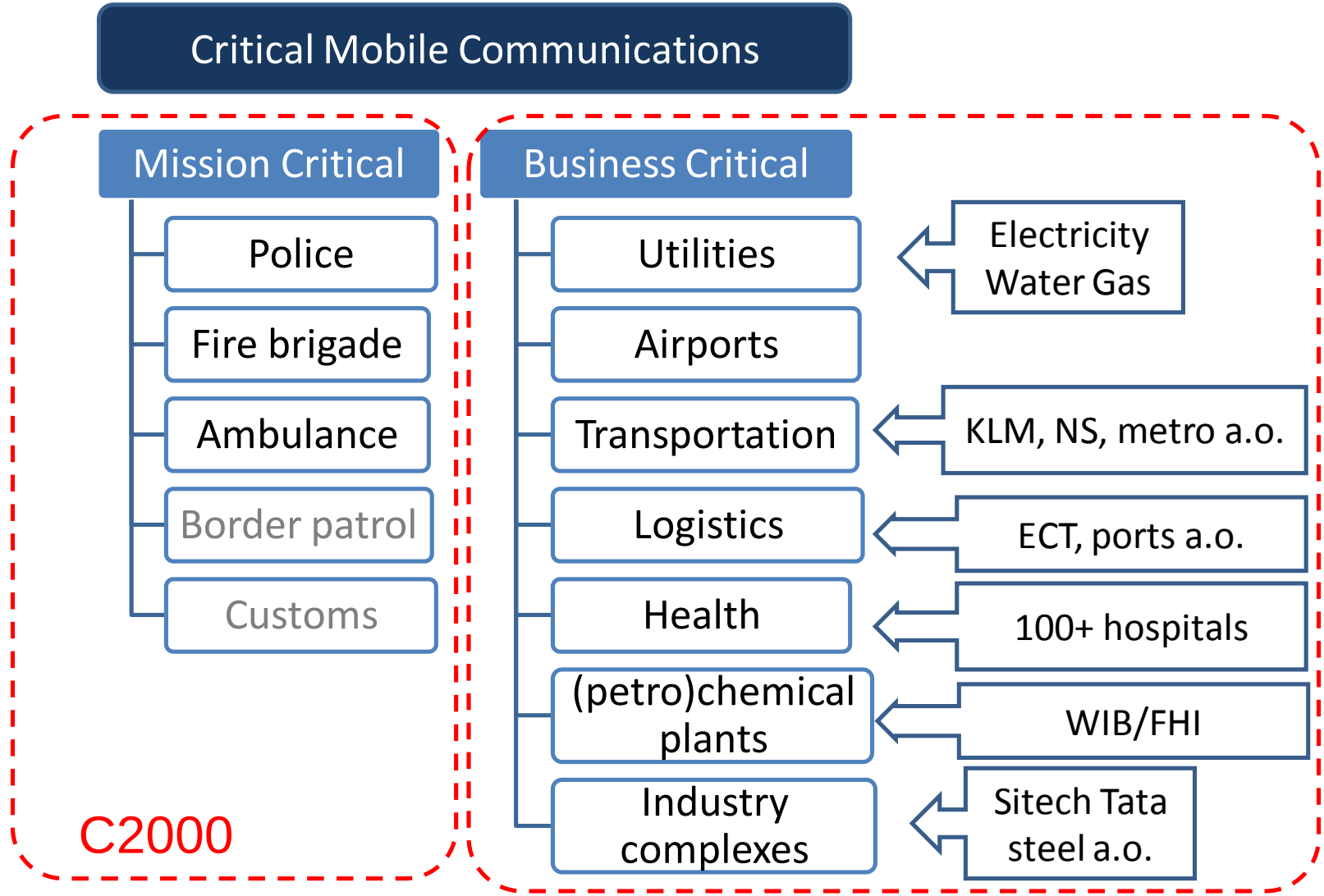
universal verticals & broad consensus

‘stacking’ requirements



Source: TCCA

Critical communications segments

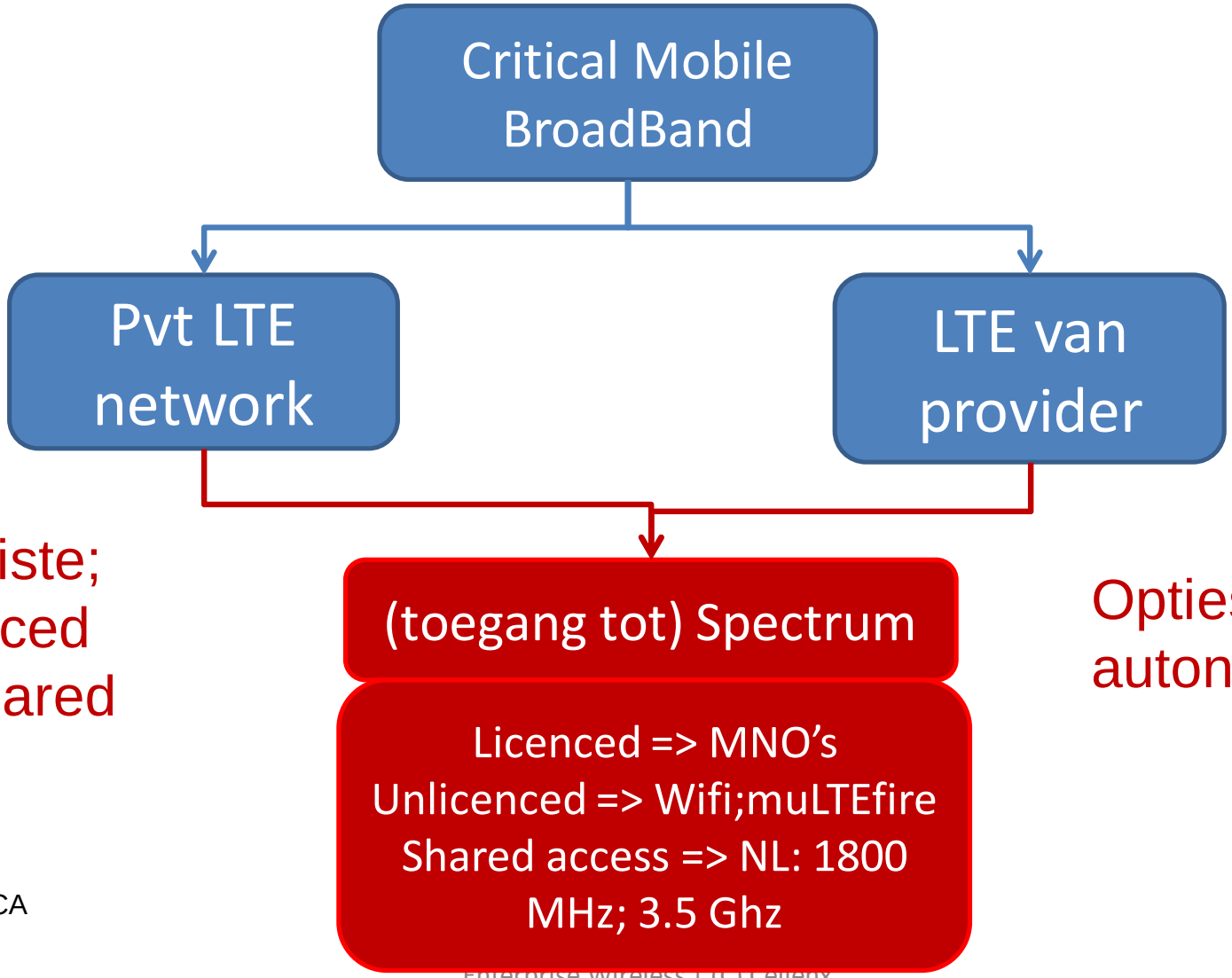


Source: TCCA

Associations of critical mobile broadband users !

country	association	focus
	KMBG: Kritisch Mobiel Breedband Gebruikers	Public Safety and large verticals
	5G ACIA: 5G Alliance for Connected Industry and Automation	Predominantly manufacture and plant automation
	AGURRE	Public Safety and large nationwide verticals
	Tech UK SPF, spectrum policy forum	Any vertical with a stake in spectrum issues

Spectrum sleutelrol voor Business Critical Mobile Broadband



Vereiste; licenced of shared

Opties & autonomie

Source: TCCA

Private spectrum in omringende landen

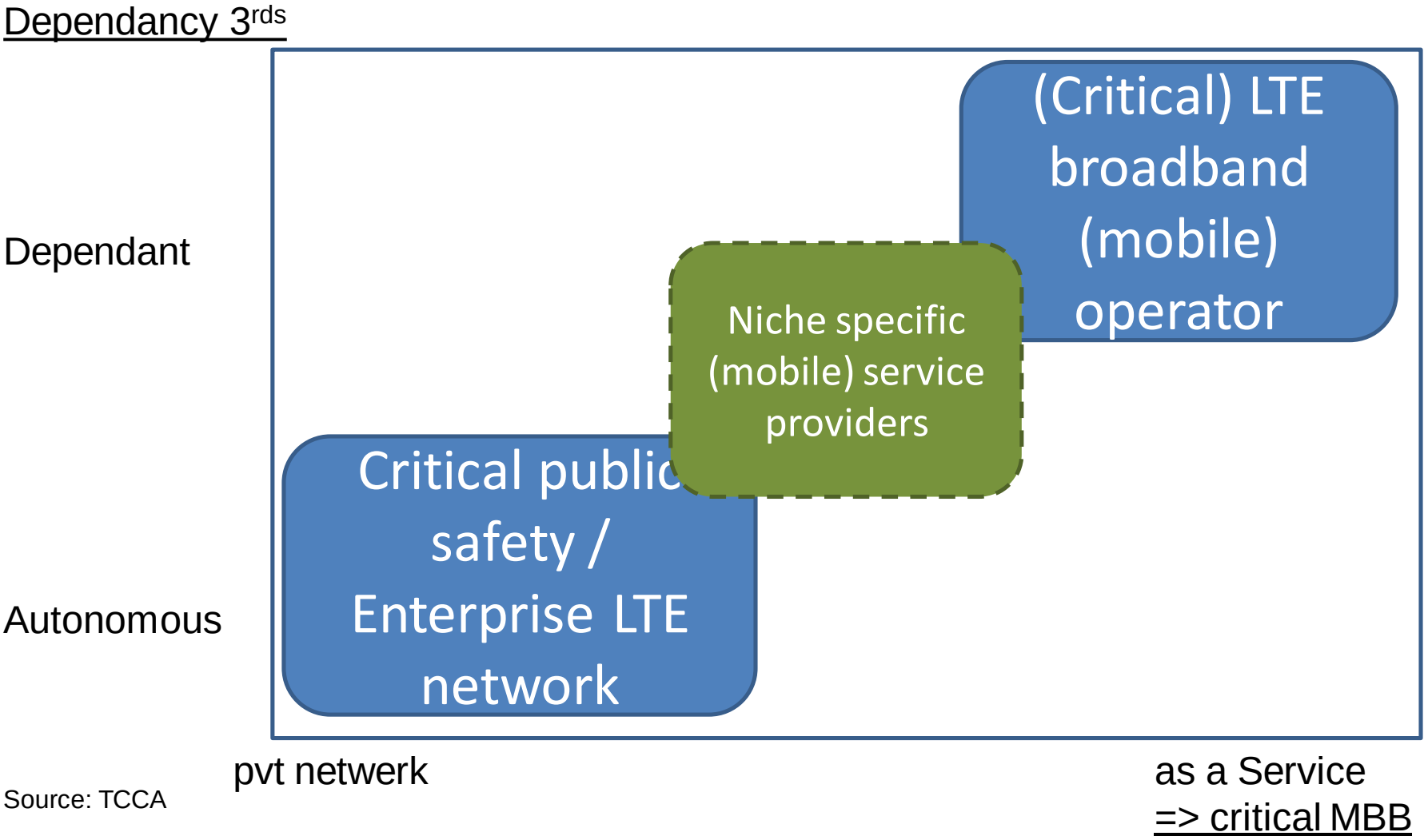
	Country	Spectrum	Availability
	Netherlands	1800 MHz 'guard band' 3.5 GHz (3.7-3.8 GHz :=> 2X50)	Available for years Available; Relocation
	Germany	3.7 – 3.8 GHz	Regional licences As of H2 2019
	UK	3.8 – 4.2 Ghz	E 2019
	France	2.6 GHz	Available
	Sweden	3.7 – 3.8 GHz	consultation
	USA	CBRS, 3550-3700 MHz	H2 2019

Source: Heavy Reading, Qualcomm

Enterprise LTE in Netherlands: large scale current projects/usage

Organisation	Network	Frequency	Status
Schiphol airport	Professional LTE for Business Critical MBB,	Tbd; pvt or aaS	Consultation held, RFQ next
Container Terminal port Rotterdam	Enterprise LTE for vehicle control	3.5 Ghz	operational
NS Dutch Railway	'Hyperconnect' business critical LTE for operations	aaS from MNO	awarded to KPN
Health and other verticals	pvtGSM in shared licence exempt spectrum	5 Mhz in 'guard band' 1.8 GHz	**500-700** systems (source: EZK)
Miscelaneous applications	Pvt LTE in public surveillance, industry, WLL	100 Mhz in 3.5 Ghz	**209** applications (source: AT)

Emerging (new) business critical mobile service providers



Source: TCCA

Positionering publieke mobiele netwerken, private LTE en indoor

Openbaar terrein;
publieke mobiele netwerken
Geen gegarandeerde service levels

Bedrijfsterrein;
private LTE netwerk
Gecontroleerde KPI's

Bedrijfspand;
indoor netwerk
Doorgifte publieke en/of private mobiele netwerken

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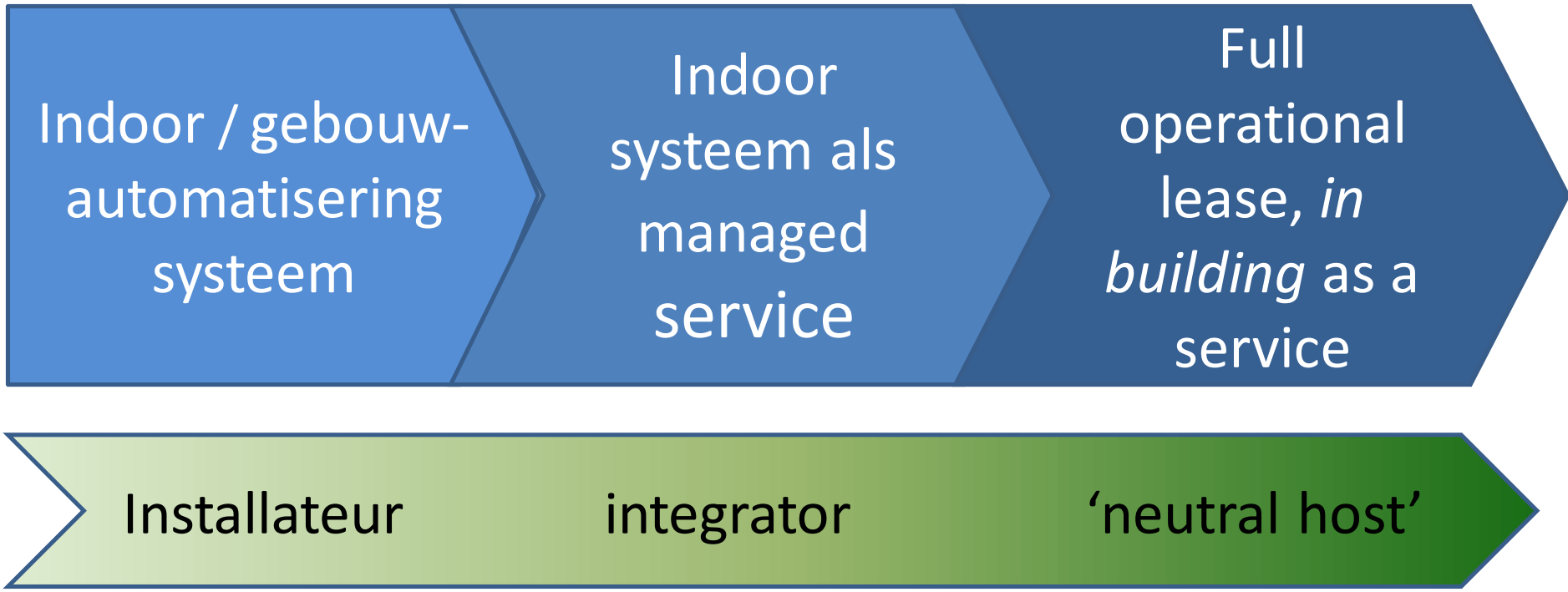
Keuze: *Indoor** systeem of *aaS*



* Private LTE idem

Indoor of pvtLTE *as a service*

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Cellnex' full service propositie:

	Vendor	Installateur	System integrator	Full solution provider
Consultancy	✓	✓	✓	✓
Installatie	✗	✓	✓	✓
Beheer	✗	✗	✓	✓
Volledige financiering	✗	✗	✗	✓
Operator inkoppeling & SLA	✗	✗	✗	✓

Full service netwerken Milaan

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Porta Nuova Garibaldi Complex

Porta Nuova Garibaldi Complex
Milano

CUSTOMERS

WIND · 3 · vodafone · TIM

LOCATION
- Unicredit Tower (offices)
- Towers B & C (offices)
- Bosco Verticale (residential)
- Varesine (offices & residential)
- Esselunga (underground)
- HSBC Bank
- Samsung headquarters
- Skyscrapers car park (20,000 sqm)
- Esselunga car park (7,000 sqm)

TECHNICAL SOLUTION

- SISO and MIMO
- 3,185 Antennas
- 43 RU

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Conclusie, samenvatting

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Mobiele communicatie, ook *binnen* gebouwen

- Indoor netwerk faciliteert mobiel gebruik bìnnen
- Kostenvoordelen door clustering dure radio middelen

Private LTE netwerk met bedrijfskritische prestaties

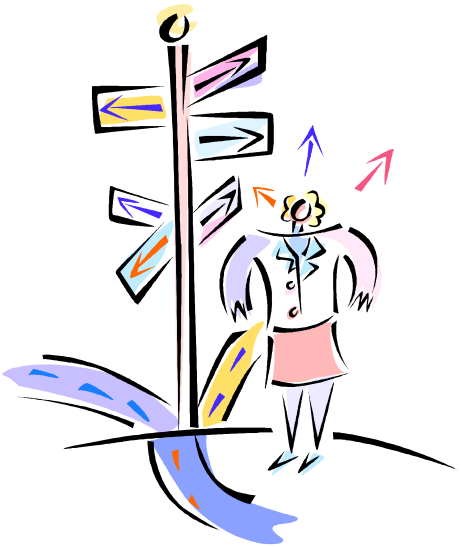
- Mobiel gebruik in kritische bedrijfsprocessen
- Unieke mogelijkheden door beschikbaar spectrum

Nieuwe '*neutral hosting*' full service proposities

- Indoor of private netwerk aaS; service fee ipv investering

Thanks !

Koen.mioulet.ext@cellnextelecom.nl

(+31 0)6 29571105

In de expo | Cellnex